

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP03/12583

A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl.⁷ H01L29/788, H01L29/792, H01L27/115, H01L21/8247

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl.⁷ H01L29/788, H01L29/792, H01L27/115, H01L21/8247

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho	1922-1996	Toroku Jitsuyo Shinan Koho	1994-2004
Kokai Jitsuyo Shinan Koho	1971-2004	Jitsuyo Shinan Toroku Koho	1996-2004

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6388293 kB1 (Seiki O. OGURA), 14 May, 2002 (14.05.02), Full text; all drawings & JP 2001-148434 A full text; all drawings	1, 2
X	JP 2002-170891 A (Halo LSI Design & Device Technology Inc.), 14 June, 2002 (14.06.02), Full text; all drawings & WO 02/43158 A1	1, 2

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
06 January, 2004 (06.01.04)Date of mailing of the international search report
20 January, 2004 (20.01.04)Name and mailing address of the ISA/
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.

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Box I Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

As mentioned on (extra sheet), there must exist a special technical feature so linking a group of inventions of claims as to form a single general inventive concept in order that the group of inventions may satisfy the requirement of unity of invention. This international application contains eight groups of inventions: the inventions of claims 1, 2; the inventions of claims 3, 4; the inventions of claims 5, 6; the invention of claim 7; the invention of claim 8; the inventions of claims 9, 10; the invention of claim 11; and the invention of claim 12.

(Continued to extra sheet)

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest ☐ The additional search fees were accompanied by the applicant's protest.
☐ No protest accompanied the payment of additional search fees.

Continuation of Box No. II of continuation of first sheet (1)

There must exist a special technical feature so linking a group of inventions of claims as to form a single general inventive concept in order that the group of inventions may satisfy the requirement of unity of invention. The group of inventions of claims 1-12 is linked only by the technical feature defined in claim 1.

This technical feature, however, cannot be a special technical feature since it is disclosed in prior art documents such as JP 2001-148434 A (Kabushiki Kaisha Nyuheiro), 29 May, 2001 (29.05.01), Figs. 20, 34 and JP 2002-170891 A (Halo LSI Design & Device Technology Inc.), 14 June, 2002 (14.06.02), Fig. 5.

Consequently, there is no special technical feature so linking the group of inventions of claims 1-12 as to form a single general inventive concept. Therefore, it appears that the group of inventions of claims 1-12 does not satisfy the requirement of unity of invention.

Next, the number of groups of inventions defined in the claims of this international application and so linked as to form a single general inventive concept, namely, the number of inventions will be examined.

Concerning the inventions of claims 1-12, since the technical feature of claim 1 cannot be a special technical feature, the claims 1-12 contain five groups of inventions: the inventions of claims 1, 2; the inventions of claims 3, 4; the inventions of claims 5-10; the invention of claim 11; and the invention of claim 12.

Claims 5-10 will be further examined in detail. Claims 5-10 are linked only by the technical feature defined in claim 5. The technical feature of claim 5, however, cannot be a special technical feature since it is disclosed in the above-mentioned prior art documents. Consequently, the claims 5-10 define four groups of inventions: the inventions of claims 5, 6; the invention of claim 7; the invention of claim 8; and the inventions of claims 9, 10.

Therefore, this international application is considered to contain eight groups of inventions: the inventions of claims 1, 2; the inventions of claims 3, 4; the inventions of claims 5, 6; the invention of claim 7; the invention of claim 8; the inventions of claims 9, 10; the invention of claim 11; and the invention of claim 12.